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STATE OF ALASKA
DEPARTMENT OF FISH AND GAME
PRIVATE NONPROFIT PROGRAM

I. *INDENTIFICATION OF APPLICANT*

A. Applicant Information

Gary Fandrei		Cook Inlet Aquaculture Assc.
Applicant Name		Organization
40610 Kalifornsky Beach Rd.		(907) 283-5761
Address		Phone Number
Kenai	Alaska	99611-9445
City	State	Zip

B. Hatchery Information

Trail Lakes Hatchery	27
Hatchery Name	PNP Permit Number

II. *STATEMENT OF APPLICANT'S GOALS AND OBJECTIVES*

A. Describe the nature of the requested alteration, why you have decided to request it, and what you generally expect to accomplish by the expansion of your program, including answers to the following questions. Will the proposed project affect wild salmon stocks or existing fisheries? How will a significant contribution to common property fisheries be made? How will potential effects and interactions between introduced or enhanced stocks and wild stocks be assessed? What marking and recovery studies are being proposed that will allow the project to be evaluated? What are the potential benefits to fisheries or wild stocks from the proposed project? Has this project been discussed with the department's area or regional management biologists? (Attach additional pages as necessary.)

1) Switch the broodsource for the Lower Cook Inlet Lakes sockeye salmon enahncement project from the late-run Hidden Lake stock to early-run English Bay Lakes system stock.
2) To assure stocking goals are met during the transition from the late-run Hidden Lake stock to the early-run English Bay Lakes system stock utilize early-run Bear Lake, early-run English Bay Lakes system and late-run Hidden Lake stock sockeye returning to Tutka Bay Lagoon for fry releases to Leisure Lake, Hazel Lake and Kirschner Lake.
3) Update language to correct errors and reflect current project status

See attached documents:
TLH PAR 2-15-11 Goals
TLH PAR 2-15-11 BMP

III. ***IMPACTS ON EXISTING HATCHERY PROGRAM***

A. **Present Permitted Capacity**
(numbers of green eggs by species)

Pink	0	Coho	6,000,000
Chum	0	Chinook	4,000,000
Sockeye	30,000,000	Other	

B. **Capacity After Request**
(numbers of green eggs by species)

Pink	No change requested	Coho	No Change requested
Chum	No change requested	Chinook	No change requested
Sockeye	No change requested	Other	

C. **Water Use**

1. **List the total amount of water available and the source.**

TLH design water capacity:	4.25 mgd from the surficial aquifer.
TLH observed seasonal low water capacity:	3.18 mgd from the surficial aquifer.

2. **List the amount of water presently being used.**

TLH current water use:	3.01 mgd from the surficial aquifer.

3. **List the additional amount of water needed for this alteration.**

TLH increase in water use:	0.0 mgd from the surficial aquifer.

IV. *HATCHERY DESIGN*

A. Please provide a detailed description of new facilities needed with this alteration (e.g., buildings, incubators, rearing space, piping, etc.). This description should represent a solid concept of the proposed hatchery changes/expansion. Drawings showing the layout of new structures should be attached when appropriate.

No alterations to TLH are required to accommodate this change.

Switching the Lower Cook Inlet Lakes sockeye brood source from late-run Hidden Lake stock to early-run English Bay Lakes system stock and utilizing early-run Bear Lake stock during the transition from the current late-run sockeye stock to the proposed early-run stock will not require additional incubators, raceways or alterations to TLH.

V. *DECLARATION AND SIGNATURE*

I declare that the information given in this application is, to my knowledge, true, correct, and complete.

Gary Fandrei for CIAA
Name of Applicant

2/10/11
Date Signed

Gary Fandrei for CIAA
Signature of Applicant

TLH PAR 2-15-11 - Statement of Goals and Objectives

Nature of the Requested Alteration:

This alteration request modifies the Trail Lakes Hatchery (TLH) Basic Management Plan (BMP) by:

Correcting typographical errors or updating the language of:

1. Sections 4.1, 6.0 and 10.5 by removing extra "spaces".
2. Section 2.3 by striking obsolete language pertaining to past hatchery operations.
3. Section 5.1 by updating the language pertaining to egg collection for the Lower Cook Inlet Lakes project consistent with the current status of the project.
4. Section 10.1 by abbreviating "Alaska Department of Fish & Game" consistent with the rest of the section.
5. Section 10.2 by adding the word "in".

Switching the broodstock for the Lower Cook Inlet Lakes sockeye enhancement project from the late-run Hidden Lake stock to the early-run English Bay Lakes system stock.

Adding early-run Bear Lake stock as a broodstock for the Lower Cook Inlet Lakes sockeye salmon enhancement project during the transition from the late-run Hidden Lake stock to the early-run English Bay Lakes system stock.

Updating the description of the Tutka Bay, China Poot (Leisure Lake) and Hazel Lakes Special Harvests areas consistent with 5 AAC 21.373.

This request does not increase the permitted egg capacity of Trail Lakes Hatchery nor does it require any modifications to Trail Lakes Hatchery.

Why is the Alteration Being Requested:

The purpose of this request is to:

1. Secure a long-term reliable brood source for the Lower Cook Inlet Lakes sockeye enhancement project.

2. Improve the economic benefit of the Lower Cook Inlet Lakes and Tutka Bay Lagoon sockeye enhancement projects.

What is Expected to be Accomplished by the Alteration:

1. In 2004, CIAA lost access to the brood stock supporting the Lower Cook Inlet Lakes sockeye salmon enhancement project. To address this issue CIAA proposed to create a sockeye salmon return to Tutka Bay Lagoon to 1) provide a brood stock for the Lower Cook Inlet Lakes sockeye enhancement project; and, 2) to provide surplus fish for cost recovery harvest.

   Hidden Lake was selected as the brood stock for creating a return to Tutka Bay Lagoon because 1) surplus fish were historically available from Hidden Lake, 2) returns to Hidden Lake were well monitored, 3) the stock was easily accessible; and, 4) CIAA had a history of culturing this stock.

   Based on returns in 2008, 2009 and 2010, it appears the Hidden Lake stock was not a good choice for release to Tutka Bay Lagoon for brood stock or cost recovery purposes.

The Hidden Lake fish returning to Tutka Bay Lagoon have been smaller than expected, sexually maturity of returning fish is too late for meeting hatchery fish culture requirements, and the value of the cost recovery harvests has not met expectations.

From 2011 through 2018, CIAA will transition from using the late-run Hidden Lake broodstock returning to Tutka Bay Lagoon to the early-run English Bay Lakes system broodstock for the Lower Cook Inlet lakes salmon enhancement project. Initially, up to 1,000,000 gametes will be collected from fish returning to the English Bay Lakes system for incubation and rearing at Trail Lakes Hatchery and release as smolt to Tutka Bay Lagoon. Early-run English Bay Lakes system sockeye returning to Tutka Bay Lagoon will be used as the future Lower Cook Inlet lakes sockeye enhancement project broodstock as soon as the early-run returns to Tutka Bay Lagoon become established. English Bay Lakes system early run stock are being cultured at Trail Lakes Hatchery.

English Bay Lakes system early run stock are larger when they return and spawn earlier than late-run Hidden Lake sockeye. CIAA anticipates eggs will be available for hatchery culture earlier than eggs from the late-run Hidden Lake stock.

2. Returning early-run English Bay Lakes system sockeye larger at return (~5lbs) than late-run Hidden Lake stock (~4lbs). By switching to the early-run Englsih Bay Lakes system sockeye stock, CIAA anticipates the pounds of fish available for common property and cost recovery harvest will 1.25 times greater.

3. During the late-run to early–run broodstock transition period, from 2011 through 2018, CIAA will also secure up to 2,500,000 eggs from early-run sockeye salmon returning to Bear Lake, up to 4,370,000 eggs from early-run sockeye salmon returning to the English Bay Lakes system, up to 4,370,000 eggs from late-run sockeye salmon returning to Tutka Bay Lagoon and up to 4,370,000 eggs from early-run sockeye salmon returning to Tutka Bay Lagoon for fry releases to Leisure Lake, Hazel Lake and Kirschner Lake.

   Bear Lake sockeye spawn from late-July through mid-August, English Bay Lakes system sockeye spawn from late-August through mid-September and Tutka Bay Lagoon late-run sockeye spawn from late-September through October.

   During the broodstock transition period, 2011 through 2018, CIAA will collect eggs from each broodsource until the desired egg take goal is achieved. The number of eggs collected from each broodsource will be dependent on the availability of surplus fish returning to each source. The total number of eggs secured in one year from all four broodsources will not exceed 4,370,000. For any year during the transition period, Leisure Lake, Hazel Lake and Kirschner Lake will receive fry from only one broodstock, but may receive fry from different broodstocks on alternate years.

   Using a combination of broodsources during the transition period will assure stocking goals are met and future sockeye returns are available for common property and cost recovery harvests.

4. In 2010, CIAA received a net value of $3.11/lb. for early-run sockeye harvested from Resurrection Bay and $1.25/lb. for late-run sockeye harvested from Tutka Bay Lagoon. The value of the early-run sockeye were 2.4 times greater than the value of the late-run sockeye harvested in 2010.

Using early-run broodsources during the transition period will also increase the value of the returns assuring future cost recovery goals are met.

Will the Alteration Affect Wild Salmon Stocks or Existing Fisheries:

1. Broodstock and gametes will be collected from sockeye returns to the English Bay Lakes system. Sockeye harvests and sockeye escapement to the English Bay Lakes system are expected to be maintained at historic levels. Returning fish are harvested in Port Graham Bay and Lower Cook Inlet.

   No change to the native stocks in English Bay Lakes is anticipated.

   A wide variety of oceanic species occupy Cook Inlet. No known problems exist with any of the populations and no effects are expected to the other oceanic stocks.

2. The Tutka Bay Lagoon sockeye enhancement project is a continuation of an existing CIAA project. Sockeye returns are expected to be maintained at historic levels.

   The adult sockeye salmon returning to Tutka Bay will be managed primarily for hatchery cost recovery harvest and broodstock needs. Some fish may be harvested in other fisheries (the Lower Cook Inlet setnet fishery) as the fish enter Tutka Bay. The number of fish harvested for cost recovery and their value is expected to increase. This will reduce the need to harvest fish at other CIAA Lower Cook Inlet Lakes sockeye salmon enhancement projects including Kamishak, Kachemak and Resurrection Bays. Cost Recovery harvest estimates will be identified each year in the Trail Lakes Hatchery Annual Management Plan in conjunction with hatchery cost recovery and common property harvests in Resurrection, Kachemak and Kamishak Bays.

   A wide variety of oceanic species occupy Resurrection, Kachemak, Kamishak and Tutka Bays. No known problems exist with any of the populations and no effects are expected to the other oceanic stocks.

3. The Lower Cook Inlet Lakes Sockeye salmon enhancement project is a continuation of an existing CIAA project that has included fry releases to Chenik Lake (suspended), Kirschner Lake (active), Ursus Lake (suspended), Leisure Lake (active), Bruin Lake (suspended), Hazel Lake (active), Upper Paint River Lake (suspended) and Lower Paint River Lake (suspended). Changing the brood-stock source for the existing Lower Cook Inlet Lakes Sockeye Salmon Enhancement project is not expected to change and/or affect wild salmon stocks at these lakes. Changing the brood-stock source will change the run timing requiring adjustments to the sockeye fishery.

   The adult sockeye salmon returning to the Lower Cook Inlet Lakes sockeye enhancement project will be managed primarily for common property and cost recovery harvest. The number of fish harvested by the common property and cost recovery fisheries will vary annually. As the value of the fish returning to the Lower Cook Inlet lakes increases, the proportion of the return needed for cost recovery harvest may decrease. Common property harvest estimates will be identified each year in the Trail Lakes Hatchery Annual Management Plan in conjunction with the hatchery cost recovery harvest.

   No change to the native stocks in Leisure Lake, Hazel Lake or Kirschner Lake is anticipated.

A wide variety of oceanic species occupy Kachemak and Kamishak Bays. All stocks are believed to be at historic levels, no known problems exist with any of the populations and no effects are expected to the wild stocks.

4. To maintain the Lower Cook Inlet Lakes sockeye project during the transition from the current late-run Hidden Lake stock to the early-run English Bay Lakes system stock (2011 through 2018) and assure stocking goals are met, eggs will be collected from surplus fish returning to Bear Lake, the English Bay Lakes system and Tutka Bay Lagoon. The desired Bear Lake inriver returns will include additional broodstock for maintaining the Lower Cook Inlet Lakes sockeye stocking project. Additional actions may be necessary to manage for an escapement near the upper end of the desired Bear Lake inriver return.

   Eggs will not be collected from any system when surplus fish are not available as determined by ADF&G.

   No negative effects are expected to the wild stocks or to existing fisheries of Bear Lake, the English Bay Lakes system or Tutka Bay Lagoon as a result of this alteration.

   A wide variety of oceanic species occupy Resurrection, Kachemak and Kamishak Bays. No known problems exist with any of the populations and no effects are expected to the other oceanic stocks.

What Contribution will the Alteration Make to the Common Property Fisheries:

1. This alteration is expected to maintain adult returns at historic levels. The fish will be available to the common property fishery - to commercial, sport, personal use, subsistence, and cost recovery harvest in Resurrection Bay, Port Graham Bay, Tutka Bay, Kachemak Bay and Kamishak Bay. Adult returns will be earlier in Tutka Bay, Kachemak Bay and Kamishak Bay and changes to current harvest plans for these areas are anticipated.

2. This alteration will increase the value of the fish returning to Tutka Bay, Kachemak Bay and Kamishak Bay. The additional value will decrease the number of fish harvested by CIAA for cost recovery and increase the number of fish available for commercial, sport and personal use fisheries in Resurrection Bay, Kachemak Bay and Kamishak Bay.

How Will Effects and Interactions between Introduced and Wild Stocks be Assessed:

1. This project is expected to change the Tutka Bay Lagoon, Leisure Lake, Hazel Lake and Kirschner Lake return from a late-run timing to an early-run timing. Returns will be maintained at historic levels. Returning fish will primarily be harvested in terminal cost recovery and commercial fisheries. No change to the native stocks is anticipated. The use of a local stock, English Bay Lakes system sockeye salmon, as the broodsource will minimize impacts due to straying.

   CIAA will work with ADF&G to assess any potential unexpected effects and/or interactions that may arise in the future. Assessment studies will be defined in the Annual Management Plan.

2. To maintain the Lower Cook Inlet Lakes sockeye project during the transition from the current late-run Hidden Lake stock to the early-run English Bay Lakes system stock (2011 through 2018) and assure stocking goals are met, up to 2,500,000 eggs will be collected from surplus fish returning to Bear Lake. Resulting fry will be released to Leisure Lake, Hazel Lake or Kirschner Lake. The short –term use of the Bear Lake broodstock and 100% or nearly 100% harvests of the returns will minimize the impact of straying.

   CIAA will work with ADF&G to assess any potential unexpected effects and/or interactions that may arise in the future. Assessment studies will be defined in the Annual Management Plan.

What Marking and Recovery Studies are Being Proposed:

1. All sockeye smolt released to Tutka Bay Lagoon will be thermally marked. Otoliths may be collected and the contribution of adult fish to other fisheries may be determined. Harvests as reported by ADF&G will be used to determine the magnitude of the adult return. Assessment studies will be defined in the Annual Management Plan.

2. All sockeye released to the Lower Cook Inlet Lakes will be thermally marked. Otoliths may be collected and the contribution of adult fish to other fisheries may be determined. Harvests as reported by ADF&G will be used to determine the magnitude of the adult return. Assessment studies will be defined in the Annual Management Plan.

What are the Potential Benefits to Fisheries or Wild Stocks:

1. CIAA's goal is to maintain the adult sockeye returns to Tutka Bay Lagoon at historic levels. Switching from a late-run stock to an early-run stock will increase the economic value of the adult return and increase the value of CIAA's cost recovery harvest in Tutka Bay Lagoon. Additional CIAA cost harvest value will decrease the number of fish harvested by CIAA at other lower Cook Inlet Enhancement projects making more fish available for harvest in commercial, sport and personal use fisheries.

   There are no clearly defined benefits to wild stocks that result from the Tutka Bay Lagoon sockeye salmon enhancement project; however, by providing harvest opportunities on stocked fish, harvest efforts on wild stocks may be reduced.

2. CIAA's goal is to maintain the adult sockeye returns to the Lower Cook Inlet Lakes sockeye enhancement project at historic levels by securing a long-term reliable brood source. Switching from a late-run stock to an early-run stock will increase the economic value of the adult return and increase the value of CIAA's cost recovery harvest in Kachemak and Kamishak Bays. Additional CIAA cost harvest value will decrease the number of fish harvested by CIAA making more fish available for harvest in commercial, sport and personal use fisheries.

   There are no clearly defined benefits to wild stocks that result from the Lower Cook Inlet Lakes sockeye salmon enhancement project; however, by providing harvest opportunities on stocked fish, harvest efforts on wild stocks may be reduced.

3. The use of multiple stocks as a short-term brood source until a future broodsource is established at Tutka Bay Lagoon for the Lower Cook Inlet Lakes sockeye enhancement project assures the stocking goal for the Lower Cook Inlet Lakes sockeye project will be obtained every year.

There are no clearly defined benefits to wild stocks that result from the Lower Cook Inlet Lakes sockeye salmon enhancement project; however, by providing harvest opportunities on stocked fish, harvest efforts on wild stocks may be reduced.

Has the Project been Discussed with the Area and/or Management Biologist:

1. Switching the Tutka Bay Lagoon sockeye project from a late-run sockeye brood stock to an early-run brood source has been discussed with ADF&G's Management biologists and has been topic of several Regional Planning Team meetings. The current PAR is the result of those discussions.

Trail Lakes Hatchery Basic Management Plan

(As amended June ~~2010~~2011)

1.0 Introduction

Owned by the State of Alaska and operated by the Cook Inlet Aquaculture Association (CIAA) through contract with the Alaska Department of Fish and Game (ADF&G), the hatchery facility located at Trail Lakes is permitted to produce sockeye, coho and Chinook salmon for release at selected sites throughout the Cook Inlet (Area H) watershed.

1.1 Production Limitations

Design capacity for Trail Lakes Hatchery is 30,000,000 sockeye, 6,000,000 coho, and 4,000,000 Chinook salmon eggs for incubation in any given year.

1.2 Goals

A primary goal is to provide additional salmon to common property fisheries. Assuming only emergent fry are produced at the hatchery, and using standard ADF&G-derived approximate survival rates, at maximum permitted production about 243,000 sockeye, 49,000 coho and 10,000 Chinook salmon would be provided. Additional hatchery rearing and other environmental variables such as lake fertilization may modify the number of fish produced.

A secondary goal is to provide employment opportunities within the Cook Inlet area. At least 3 full-time positions and as many as 30 seasonal positions are provided by facility operation.

1.3 Objectives

1. Achieve egg collection goals at all sites in each year.
2. Achieve standard within-hatchery survivals.
3. Achieve release goals at all sites in each year.
4. Achieve adult return goals at all sites in each year.

2.0 Hatchery Operational Considerations

2.1 Facility Design

1. Architect: R&M Consultants, 1980 –1981.
2. Contractor: Rogers & Babler, Spring 1981 – Fall 1982.
3. Water System:
   Process Water Source: Pumped from wells.
   Process Water Treatment: Drum filter, U.V. treatment and incineration or chlorination and disposal of sludge.
   Sewage Treatment: Aerobic treatment.
4. Incubation:
   Nopad (Zenger).
   Kitoi.
5. Rearing:
   Concrete raceways – 4 indoor, 38 outdoor
   Aluminum raceways – 21 indoor, 16 outdoor.
6. Power: Commercial source with diesel electric standby.
7. Adult Holding Facilities: None.
8. Facility Layout: see Figure 1.

2.2 Fish Cultural Consideration

Sockeye: Egg takes will be conducted in accordance with ADF&G Sockeye Salmon Culture Policy. Single family delayed fertilization and water hardening disinfecting techniques will be used.

Ripe fish will be killed and surface disinfected prior to gamete removal. Every attempt shall be made to attain a 1:1 sex ratio during fertilization. Spawn takers will disinfect their hands or gloves, and work area after each fish is used.

Equipment, crew clothing and other instruments or accessories utilized at all spawning locations will be kept separate and will be disinfected. All carcasses will be sold, given away or discarded into the water body from which they were removed.

Iced coolers of eggs and milt in individual containers will be transported to the hatchery. Containers shall be disinfected prior to admission into the facility. Eggs will be disinfected prior to incubator loading.

Coho: Egg collections will be conducted utilizing standard techniques. Immediate or delayed fertilization will be used.

Ripe fish will be killed prior to gamete removal. Generally, equipment, crew clothing and other instruments or accessories utilized will be disinfected daily. In some situations, disease control concerns may require sanitation practices

similar to those utilized for sockeye salmon. All carcasses will be sold, given away or discarded into the water body from which they were removed.

Iced coolers of eggs and milt in individual containers or iced coolers of fertilized eggs in bags will be transported to the hatchery. Containers shall be disinfected prior to admission into the facility. Eggs will be disinfected prior to incubator loading.

2.3 Stock Separation and Release Plans

Eggs will be placed in Kitoi or Zenger style incubators supplied with well water. There will be no water reuse between incubators.

Incubators containing eggs from a particular stock will be grouped together within a single module or sub-module. A sub-module is a physically sub-divided portion of a module. Each stock will be supplied with separate utensil sets. There will be no interchange of utensils between stocks.

Emergent fry from each stock will be placed in separate raceways for holding and/or rearing prior to release. All raceways will be supplied with well water. There will be no water reuse between stocks. Each raceway will be provided with separate utensil sets. There will be no interchange of utensils between raceways.

Provisions will be made to exclude predatory animals or birds from the outdoor raceway complex. ~~Aluminum raceways will be placed into each incubation module annually as fry emerge and incubators are removed.~~

Time, life stage, and size of release or transfer to another facility will vary by project. Release plans are provided in subsequent sections of this document. Specific release plans are provided in the Trail Lakes Hatchery Annual Management Plan.

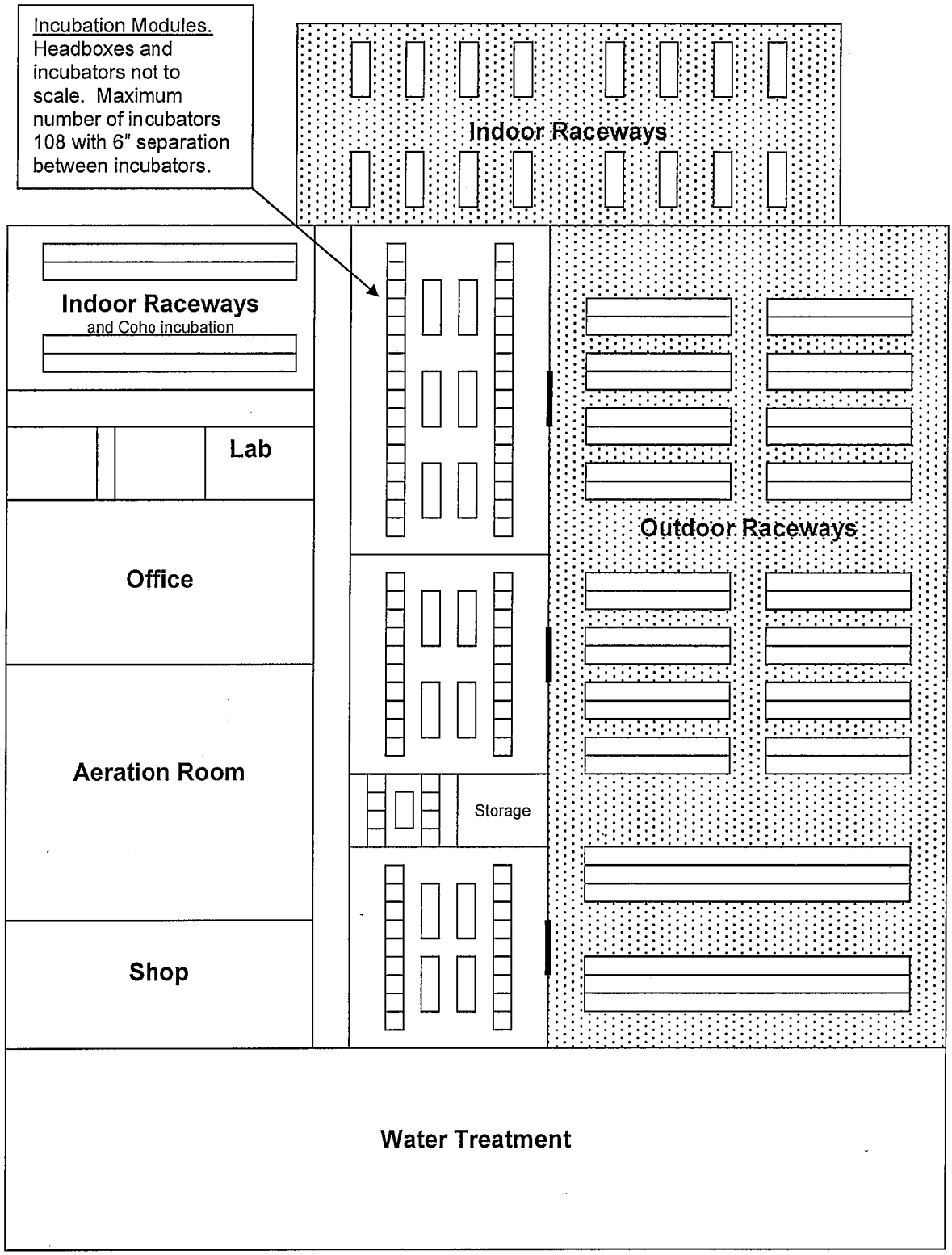

Figure 1. The Layout of Trail Lakes Hatchery.

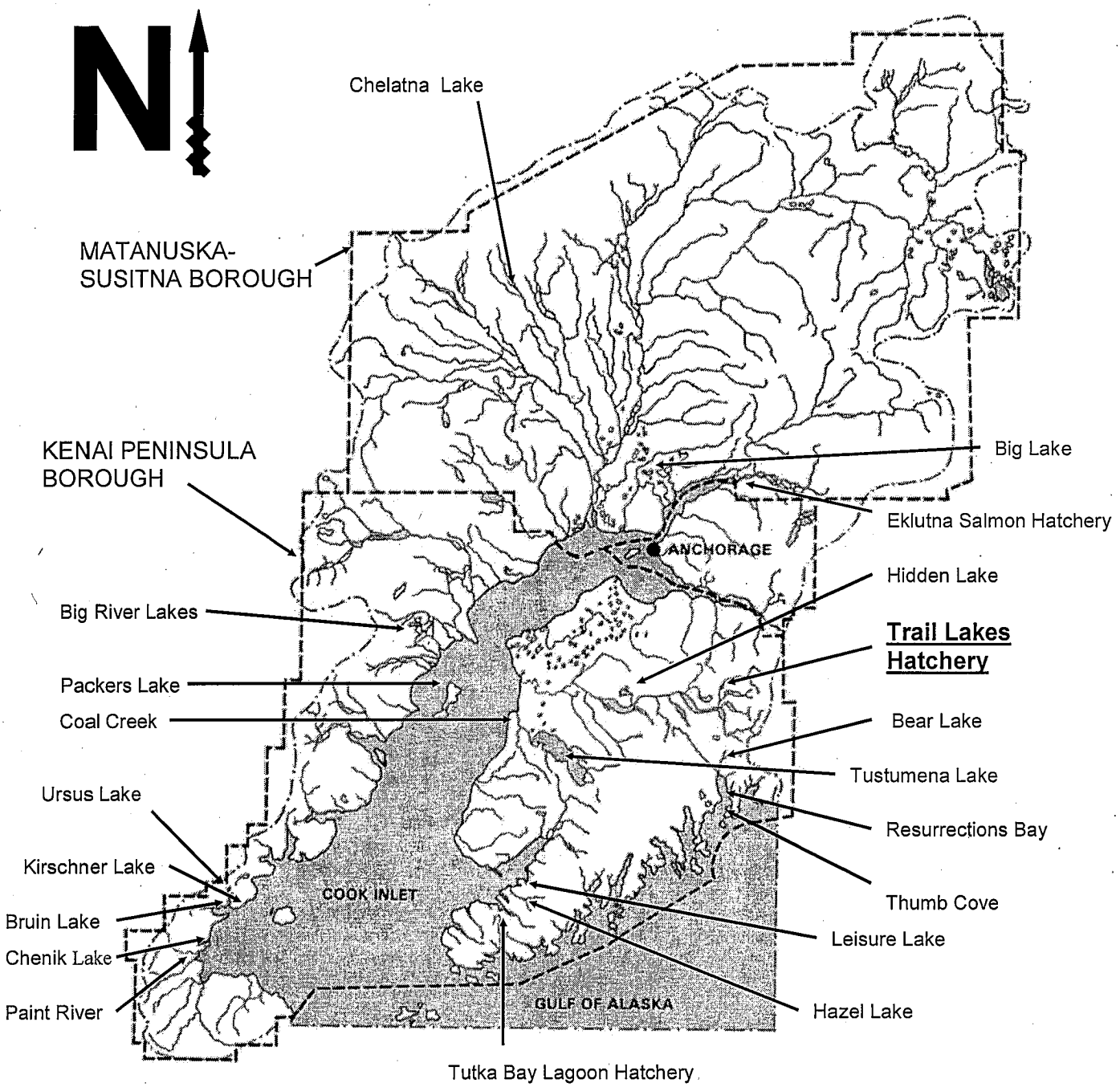

Figure 2. Project Locations.

3.0 Chelatna Lake Sockeye

Chelatna Lake (4,181 acres) is located in the headwaters of the Susitna River drainage (Figure 2). The intent of the Chelatna Lake project was to increase sockeye production through the stocking of fry into a productive but underutilized rearing habitat.

Chelatna Lake was stocked from 1990 through 1996, at which time the returning adult sockeye population appeared adequate for maintaining a self-sustaining run with a harvestable surplus.

If future fisheries enhancement activities at Chelatna Lake are deemed necessary to maintain the sockeye population and a harvestable surplus, the enhancement activities will be developed in cooperation with the Alaska Department of Fish and Game and incorporated into this plan following accepted procedures. If a broodstock source is necessary for these enhancement activities, priority consideration will be given to returning Chelatna Lake sockeye adults.

4.0 Big Lake Sockeye

ADF&G initiated this project in 1976 at the Big Lake Salmon Hatchery; CIAA assumed operation of the project in 1993 when the project was transferred from ADF&G's Big Lake Hatchery to CIAA's Eklutna Salmon Hatchery. This project was transferred from the Eklutna Salmon Hatchery to the Trail Lakes Hatchery in July 1998.

The purpose of the project is the enhancement of the Big Lake sockeye return for the common property fishery. Production from this project contributes to the commercial fishery in Cook Inlet and a significant personal use fishery on Fish Creek.

CIAA will release up to 5.0 million sockeye into the Big Lake system to produce approximately 1.0 million smolt, which in turn provide annual returns to Big Lake of up to 200,000 adult sockeye salmon.

4.1 Development Schedule

Up to 6.25 million green eggs may be taken for incubation at Trail Lakes Hatchery in any one year. The resulting fish will be reared to smolt following standard hatchery procedures at Trail Lakes Hatchery and, when water supplies are limited, at the Eklutna Salmon Hatchery. This number of eggs should result in the release of approximately 5.0 million fish above the Big Lake Hatchery site.

4.2 Brood Stock

1. Sources: The approved donor source is Big Lake. Carcasses from the sockeye salmon used for broodstock must be removed from the area.

2. Management: Specific management actions are governed by regulations established by the Alaska Board of Fisheries. No specific management strategies are applied to ensure sufficient hatchery broodstock is available in the Big Lake system.

3. Egg Removal Schedule: The sockeye escapement goal for Big Lake is 50,000. The minimum escapement goal in Meadow Creek is 1000. If escapement to Meadow Creek is more than 1,000, but is 5,000 or less, up to 90% of any fish exceeding 1,000 may be used for hatchery broodstock (5,000 desired). If escapement into Meadow Creek is more than 5,000, up to 5,000 fish plus any in excess of 25,000 may be used for hatchery broodstock.

4.3 Release Plans

Sockeye fry will be reared to the spring fry, fall fry, and smolt stages and then transported to the Big Lake system by truck for release in May, June, September

or October of each year. Approximately 5.0 million fish will be released above the Big Lake Hatchery site.

4.4 Common Property Fisheries Management

The Big Lake sockeye salmon run contributes to commercial harvest in both set and drift gill net fisheries. In order to more fully utilize surplus sockeye salmon returning to the Big Lake system, the Alaska Board of Fisheries adopted a Fish Creek Sockeye Salmon Management Plan that provides for terminal or near-terminal commercial and personal use fisheries. Hook and line harvest of significant numbers of Big Lake sockeye is effectively eliminated by regulations that close the entire drainage above the Knik-Goose Bay road to salmon fishing and allow weekend-only fishing in the lower portion of Fish Creek beginning the second Saturday in August after completion of the sockeye salmon run.

4.5 Special Harvest Management

1. **Definition:** No Special Harvest Area (SHA) is proposed for sockeye salmon returning to Big Lake.

2. **Management Plan:** No CIAA "cost recovery" harvest is proposed.

4.6 Special Research and Operational Requirements

Sockeye salmon spring fry, fall fry, and smolt will be otolith marked prior to release into Big Lake each year. Specific evaluation plans and release locations will be included in each year's Annual Management Plan.

5.0 Hidden Lake Sockeye

Hidden Lake (1,687 acres) is located in the central Kenai Peninsula, within the boundaries of the Kenai National Wildlife Refuge (Figure 2). Hidden Lake has been monitored each year since 1976 and has been the site of an ADF&G enhancement project in 1976, 1977 and all years since 1982. CIAA began operating the project in 1988. Since its origin, the intent of the enhancement program at Hidden Lake has been to maximize sockeye production by stocking fry into this unusually productive, but spawning limited, system. Field activities including egg collection, fry release and scientific sampling are conducted under the terms of a Kenai National Wildlife Refuge Special Use Permit issued to ADF&G.

5.1 Development Schedule

CIAA is currently permitted to collect up to 7.332 million sockeye salmon eggs from Hidden Lake. An egg take of 7.0 million was achieved by ADF&G in 1987. From 2005 through 2009, a portion of the sockeye eggs collected from Hidden Lake ~~will be~~were used to supply both the Lower Cook Inlet lakes enhancement project and the Tutka Bay Lagoon smolt remote release project (see below). Projections based on known numbers of out-migrant smolts from Hidden Lake indicate that an egg take goal of 10 million can be achieved in future years. Unless CIAA obtains U.S. Fish and Wildlife Service (USFWS) permission to ~~conduct cost recovery harvests on returning Hidden Lake fish~~increase the number of fish returning to Hidden Lake, egg takes used for releases back into Hidden Lake will be limited to the number of eggs which can reasonably be projected to yield escapements to the lake of 30,000 adult fish.

5.2 Brood Stock

1. Sources: Hidden Lake sockeye adults will be seined at major spawning sites along the shoreline. Fish will be sorted for ripeness. Fish that are nearly ripe will be held in enclosures or net pens until ripe.

2. Management: Adult sockeye returning to Hidden Lake will not be subject to specific management strategies designed to assure donor stock availability.

3. Egg Removal Schedule: The minimum inriver return for Hidden Lake sockeye is 8,000 fish, while the desired inriver return is 30,000 sockeyes. If sockeye escapement to Hidden Lake is less than 1,600, no eggs may be taken. Up to 80% of those fish in excess of 1,600 may be used for hatchery broodstock. No more than half of the fish used for hatchery broodstock may be females

5.3 Release Plans

Fish will be released into Hidden Lake as soon as practicable after ice out. Fish will be released at the boat ramp or at traditional spawning locations.

5.4 Common Property Fisheries Management

Returning adults will be harvested primarily in the mixed-stock Cook Inlet commercial fishery and the main stem Kenai River recreational and personal use fisheries. Additional recreational fishery harvest will occur in Hidden Lake. There will be no specific management strategies designed to harvest surpluses of Hidden Lake sockeye either in the Cook Inlet commercial fishery or the main stem Kenai River recreational fishery.

5.5 Special Harvest Management

1. Definition: A Special Harvest Area will be defined pending acquisition of a USF&WS Special Use Permit. Harvest will occur at a weir near the outlet of Hidden Lake.

2. Management Plan: CIAA personnel will be allowed to harvest and sell all adult sockeye returning to Hidden Lake in excess of the desired inriver return, which is 30,000 adult sockeyes.

Harvest will commence under the direction of ADF&G's Commercial Fisheries Area Management Biologist when the desired inriver return has passed through the monitoring weir.

5.6 Special Research and Operational Requirements

Limnological, smolt monitoring and adult monitoring studies are required.

6.0 Packers Lake Sockeye

Packers Lake (506 acres) is located on Kalgin Island in the Central District of Cook Inlet (Figure 2). Sockeye salmon returns to Packers Lake have been extensively monitored and various salmon enhancement activities have been implemented since 1973, when the Alaska Department of Fish and Game treated the lake with rotenone to remove competitor species. Other enhancement activities have included operation of a flow control structure in the outlet stream (1974 to date), lake fertilization (1983 to 1997) and stocking (1987 to 1997). Current enhancement activities are limited to the operation of the flow control structure and seasonal beaver dam modification. The Packers Lake fry release and nutrient enrichment portions of the project were suspended, in part, because of changes to the Cook Inlet Salmon Management Plan.

-The intent of the Packers Lake project was to maximize sockeye production through a combination of enhancement practices.

If future fisheries enhancement activities at Packers Lake are deemed necessary to maintain the sockeye population and a harvestable surplus, the enhancement activities will be developed in cooperation with the Alaska Department of Fish and Game and incorporated into this plan following accepted procedures. If a broodstock source is necessary for these enhancement activities, priority consideration will be given to returning Packers Lake sockeye adults. The Packers Lake project Special Harvest Area (SHA), which consists of Packers Creek and all marine waters within a 1-mile radius of the Packers Creek terminus, remains as defined.

7.0 Tustumena Lake Sockeye

ADF&G initiated this project in 1974. CIAA assumed operation of various parts of the project between 1993 and 1998, when CIAA assumed operation of the Kasilof River smolt migration enumeration and subsequently took over responsibility for the operation of the entire project.. In December 2003, the 9th Circuit Court ruled the Tustumena Lake enhancement project violated the 1962 Wilderness Act and ordered the project be terminated. No brood or egg collections have occurred since 2004.

The purpose of the project was enhancement of the Tustumena Lake sockeye return for the common property fishery and support of the Lower Cook Inlet barrier lakes project.

If future fisheries enhancement activities at Tustumena Lake are deemed necessary to maintain the sockeye population and a harvestable surplus, the enhancement activities will be developed in cooperation with the Alaska Department of Fish and Game and the U.S. Fish and Wildlife Service and incorporated into this plan following accepted procedures. If a broodstock source is necessary for these enhancement activities, priority consideration will be given to returning Tustumena Lake sockeye adults.

8.0 Lower Cook Inlet Lakes Sockeye

The Lower Cook Inlet lakes sockeye fry release project was initiated in 1976, with the stocking of Leisure Lake. Since 1976, the project expanded to include fry releases in up to ten Lower Cook Inlet lakes: Leisure, Hazel, Kirschner, Upper Paint, Lower Paint, Chenik, Ursus, Bruin, Elusivak, and Port Dick Lakes. Since 1997, fry have been stocked into only three of the aforementioned systems: Leisure, Hazel, and Kirschner Lakes, except in 2002, when there was one experimental release of fall fry into Upper Paint Lake. Enhancement activities at the remaining lakes have been suspended indefinitely.

In 1996, the project was transferred from the Crooked Creek Hatchery to the Eklutna Salmon Hatchery. In 1998, the project was transferred from the Eklutna Salmon Hatchery to Trail Lakes Hatchery.

The purpose of the Lower Cook Inlet Lakes sockeye fry project is to provide sockeye salmon to the Lower Cook Inlet commercial fishery and to Cook Inlet Aquaculture Association (CIAA) for cost recovery harvest. Fish are also available to the recreational fishery.

The intent of this project is to ~~initiate~~ provide returns of adult sockeye in up to seven Lower Cook Inlet lakes through annual stocking of optimum numbers of fry. Migrational barriers that prevent or inhibit upstream migration, and therefore, preclude natural spawning, characterize all seven lakes. However, operation of a fish ladder at the mouth of the Paint River could potentially allow upstream access to two of those lakes (Upper and Lower Paint River lakes).

8.1 Development Schedule

The Lower Cook Inlet fry and smolt release project has been conducted for many years. Approved Lower Cook Inlet lakes sockeye fry and smolt release sites (along with each site's present status) are:

Release Site	Status	Maximum Permitted Stocking Rate
Chenik Lake	Suspended	3,000,000
Kirschner Lake	Active	250,000
Ursus Lake	Suspended	500,000
Leisure Lake	Active	2,000,000
Bruin Lake	Suspended	500,000
Hazel Lake	Active	1,250,000
Upper Paint River Lake	Suspended	1,000,000
Lower Paint River Lake	Suspended	500,000
Tutka Bay Lagoon	Active	500,000
		9,500,000

Fry numbers released each year will likely be less than the maximum due to fry availability, re-evaluation of optimum stocking rates, and/or the number of active lake projects.

In December of 2003, the 9th Circuit Court ruled the Tustumena Lake enhancement project violated the 1962 Wilderness Act and ordered the project be terminated. Termination of the Tustumena Lake project removed CIAA's egg source for the Lower Cook Inlet Lakes enhancement project. To provide a brood source and maintain the Lower Cook Inlet Lakes enhancement project, CIAA tried to develop a sockeye return to Tutka Bay Lagoon using broodstock from Hidden Lake in Upper Cook Inlet. Surplus adult fish returning to the remote release site at Tutka Bay were also harvested in the common property fisheries of Lower Cook Inlet and by CIAA for cost recovery.

From 2005 through 2009, up to 5,000,000 eggs were collected annually from sockeye salmon at Hidden Lake, for incubation and rearing at Trail Lakes Hatchery. Of the 4,000,000 resulting fry, 3,500,000 were released in Leisure, Hazel, and Kirschner Lakes. The remaining 500,000 fry were reared to smolt for release at Tutka Bay Lagoon (approximately 250,000 smolt annually). Fish slated for release at Tutka Bay Lagoon were reared at Trail Lakes Hatchery through March or April and then transferred to net pens in Tutka Bay Lagoon for final rearing, imprinting, and release, in May or June. Freshwater from Tutka Creek was supplied to the net pens for imprinting.

Based on returns in 2008 and 2009, it appears the Hidden Lake stock was not a good choice for release at Tutka Bay Lagoon, for broodstock or cost recovery purposes. While the fish cultured well in the hatchery, and returns slightly exceeded projections, they have not served well as a broodstock for the Lower Cook Inlet Lakes. Hidden Lake sockeye typically spawn in late September and early October. Fry from these fish are not ready for release until late spring. The spawning time of Hidden Lake stock returning to Tutka Bay Lagoon is delayed by an additional two to four weeks, which ~~would result in an even~~results in a later release. In addition, the Hidden Lake fish returning to Tutka Bay Lagoon have been smaller than expected, and the value of the cost recovery harvests has not met expectations.

~~Beginning i~~In 2010, CIAA requested an alternative brood source be identified for the Lower Cook Inlet sockeye salmon enhancement project and ~~will utilize~~ Kenai Lake ~~stock~~ spawning aggregates were identified as a potential brood source ~~for the Lower Cook Inlet Lakes project, tentatively~~ through 2015. Initially, CIAA was to identify proposed spawning aggregates and submit the proposed spawning aggregates ~~will be submitted~~ to ADF&G for review and approval. ~~and, o~~Once the aggregates ~~are~~ were approved by ADF&G, CIAA ~~will~~ would collect up to 5,000,000 eggs annually from the spawning aggregates for incubation and rearing at Trail Lakes Hatchery. Of the 4,000,000 resulting fry, 3,500,000 ~~will~~ would be released at Leisure, Hazel, and Kirschner Lakes. The remaining

500,000 fry ~~will~~ would be reared to smolt for release at Tutka Bay Lagoon. Fish slated for release at Tutka Bay Lagoon ~~will~~ would be reared at Trail Lakes Hatchery through March or April and then transferred to net pens in Tutka Bay Lagoon for final rearing, imprinting, and release in May or June. Freshwater from Tutka Creek ~~will~~ would be supplied to the net pens for imprinting.

After 2015, and upon development of a ~~brood source at~~return to Tutka Bay Lagoon, up to 11.0 million green sockeye eggs ~~may~~ would be taken annually at Tutka Creek, for incubation at Trail Lakes Hatchery. This number of eggs should result in up to 9.0 million sockeye salmon fry available for release in up to seven Lower Cook Inlet Lakes, and up to ~~500,000~~1,000,000 smolt for release at Tutka Bay Lagoon. Future fry and smolt releases will be identified through the Annual Management Plan and Fisheries Transport Permit processes.

In 2010, CIAA reviewed the reported returns to the known Kenai Lake spawning aggregates and surveyed field conditions at two potential brood sources. None of the spawning aggregates were considered good brood source candidates for the Lower Cook Inlet lakes projects because returns to each spawning aggregate were variable and because of flood conditions observed in 2010.

To support the Lower Cook Inlet lakes sockeye salmon enhancement project in the future, CIAA proposes to develop a sockeye return to Tutka Bay Lagoon with broodstock secured from the English Bay Lakes system.

~~The Lower Cook Inlet fry release project has been conducted for many years. Approved Lower Cook Inlet lakes sockeye fry release sites (along with each site's present status) are:~~

~~Release Site~~	~~Status~~	~~Maximum Permitted Stocking Rate~~
~~Chenik Lake~~	~~Suspended~~	~~3,000,000~~
~~Kirschner Lake~~	~~Active~~	~~250,000~~
~~Ursus Lake~~	~~Suspended~~	~~500,000~~
~~Leisure Lake~~	~~Active~~	~~2,000,000~~
~~Bruin Lake~~	~~Suspended~~	~~500,000~~
~~Hazel Lake~~	~~Active~~	~~1,250,000~~
~~Upper Paint River Lake~~	~~Suspended~~	~~1,000,000~~
~~Lower Paint River Lake~~	~~Suspended~~	~~500,000~~
		~~9,000,000~~

~~Fry numbers released each year will likely be less than the maximum due to fry availability, re-evaluation of optimum stocking rates, and/or the number of active lake projects.~~

8.2 Broodstock

1. Sources: Prior to 2005, broodstock to support the Lower Cook Inlet lakes sockeye salmon enhancement project were secured from Tustumena Lake. From 2005 through 2009, egg collection occurred at Hidden Lake under terms of a Kenai National Wildlife Refuge (KNWR) Special Use Permit issued to ADF&G, and a Fish Transport Permit issued to CIAA. ~~CIAA captured up to 4,000 broodstock with a beach seine in Hidden Lake to secure eggs~~Gametes secured from Hidden Lake supported ~~for use in~~ the Lower Cook Inlet lakes project and smolt releases ~~the~~to Tutka Bay Lagoon~~ remote release project~~. The smolt release to Tutka Bay Lagoon was to provide a future broodsource for the Lower Cook Inlet lakes project. In 2010, ~~G~~broodstock and gametes were collected from late-run sockeye returning to Tutka Bay Lagoon; however, gametes collected from the returns to Tutka Bay Lagoon proved unsuitable for use as a long-term broodsource. ~~following ADF&G approved procedures and transported to Trail Lakes Hatchery for fertilization, incubation, and rearing.~~

From 2011 through 2018, CIAA will transition from using the late-run Hidden Lake broodstock returning to Tutka Bay Lagoon to the early-run English Bay Lakes system broodstock for the Lower Cook Inlet lakes salmon enhancement project. Initially, up to 1,000,000 gametes will be collected from fish returning to the English Bay Lakes system for incubation and rearing at Trail Lakes Hatchery and release as smolt to Tutka Bay Lagoon. Early-run English Bay Lakes system sockeye returning to Tutka Bay Lagoon will be used as the future Lower Cook Inlet lakes sockeye enhancement project broodstock as soon as the early-run returns to Tutka Bay Lagoon become established.

During the late-run to early–run broodstock transition period, from 2011 through 2018, CIAA will also secure up to 2,500,000 eggs from early-run sockeye salmon returning to Bear Lake, up to 4,370,000 eggs from early-run sockeye salmon returning to the English Bay Lakes system, up to 4,370,000 eggs from late-run sockeye salmon returning to Tutka Bay Lagoon and up to 4,370,000 eggs from early-run sockeye salmon returning to Tutka Bay Lagoon for fry releases to Leisure Lake, Hazel Lake and Kirschner Lake.

Bear Lake sockeye spawn from late-July through mid-August, English Bay Lakes system sockeye spawn from late-August through mid-September and Tutka Bay Lagoon late-run sockeye spawn from late-September through October.

During the broodstock transition period, 2011 through 2018, CIAA will collect eggs from each broodsource until the desired egg take goal is achieved. The number of eggs collected from each broodsource will be

dependent on the availability of surplus fish returning to each source. The total number of eggs secured in one year from all four broodsources will not exceed 4,370,000. For any year during the transition period, Leisure Lake, Hazel Lake and Kirschner Lake will receive fry from only one broodstock, but may receive fry from different broodstocks on alternate years.

During the transition period, late-run Tutka Bay Lagoon sockeye and early-run English Bay Lakes system sockeye will be returning to Tutka Bay Lagoon during the same year. To assure broodstock separation when both late-run and early-run fish are returning to Tutka Bay Lagoon, CIAA will collect for broodstock only early-run English Bay Lakes system sockeye returning to Tutka Bay Lagoon prior to June 30 and late-run Tutka Bay Lagoon sockeye returning to Tutka Bay Lagoon after July 21. All fish returning to Tutka Bay Lagoon after June 30 and before July 21 will be harvested.

The following table summarizes the broodstock development strategy for transitioning the Lower Cook Inlet lakes sockeye enhancement project from late-run sockeye returning to Tutka Bay Lagoon to early-run English Bay Lakes system sockeye:

Release Site	Broodstock and Backup	Projected Maximum No. of Eggs	Estimated No. of Brood	Projected Minimum No. Years Broodyears Used	Projected Maximum No. Years Broodyears Used
Tutka Bay Lagoon	Bear Lake	-	-		
	English Bay Lakes	1,000,000	820	2009 thru 2016	2009 thru 2018
	Tutka Bay Lagoon (Late-run)	-	-		
Hazel Lake	Bear Lake	1,560,000	1,060	2011 thru 2016	2011 thru 2018
	English Bay Lakes	1,560,000	1,270	2011 thru 2016	2011 thru 2018
	Tutka Bay Lagoon (Late-run)	1,560,000	1,200	2011 thru 2016	2011 thru 2018
	Tutka Bay Lagoon (Early-run)	1,560,000	1,270	2013 thru 2016	2013 thru 2018
Leisure Lake	Bear Lake	2,500,000	1,690	2011 thru 2016	2011 thru 2018
	English Bay Lakes	2,500,000	2,040	2011 thru 2016	2011 thru 2018
	Tutka Bay Lagoon (Late-run)	2,500,000	1,920	2011 thru 2016	2011 thru 2018
	Tutka Bay Lagoon (Early-run)	2,500,000	2,040	2013 thru 2016	2013 thru 2018
Kirschner Lake	Bear Lake	310,000	210	2010 thru 2016	2010 thru 2018
	English Bay Lakes	310,000	250	2011 thru 2016	2011 thru 2018
	Tutka Bay Lagoon (Late-run)	310,000	240	2011 thru 2016	2011 thru 2018
	Tutka Bay Lagoon (Early-run)	310,000	250	2013 thru 2016	2013 thru 2018
Totals	Bear Lake	2,500,000	2,960	2011 thru 2016	2011 thru 2018
	English Bay Lakes	5,370,000	4,380	2011 thru 2016	2011 thru 2018
	Tutka Bay Lagoon (Late-run)	4,370,000	3,360	2011 thru 2016	2011 thru 2018
	Tutka Bay Lagoon (Early-run)	4,370,000	3,560	2013 thru 2016	2013 thru 2018

~~If a suitable Kenai Lake stock brood source is identified by CIAA and approved by ADF&G, then CIAA will collect broodstock with a beach seine and secure eggs. The resultant sockeye fry/smolt will be released in the LCI Lakes and Tutka Bay Lagoon. CIAA will release unharmed any non-target species caught while collecting sockeye salmon broodstock.~~

~~If a suitable brood source is not approved by ADF&G, egg collection will occur at Tutka Creek under terms of a Fish Transport Permit issued to CIAA. CIAA will capture up to 4,000 broodstock to secure eggs for hatchery operations with a beach seine and weir.~~ All ~~G~~gametes will be collected following ADF&G approved procedures, and flown to Trail Lakes Hatchery for fertilization, incubation, and rearing.

2. Management: Based on provisions of 5 AAC 21.373, the department will employ management strategies within waters of the Tutka Bay SHA that are intended to ensure achievement of cost recovery and broodstock goals for TLH and Tutka Bay Lagoon Hatchery. The department will additionally manage for achievement of the established Tutka Creek pink salmon wild stock sustainable escapement goal (SEG).

~~The desired inriver returns to the approved Kenai Lake spawning aggregates will be determined by ADF&G. Adult sockeye returning to the Kenai Lake spawning aggregates will not be subject to specific management strategies designed to assure the availability of donor stock.~~

Special management of Lower Cook Inlet lakes sockeye returns to provide broodstock will not be required.

Initial stockings in Paint River lakes were originally supported from eggs collected at Tustumena Lake, and special management of Paint River sockeye salmon returns to provide hatchery broodstock was not required. Should enhancement of the Paint River Lakes resume and the fish ladder opened to migrating salmon, the Kamishak Bay fisheries will be managed to provide natural spawning escapements into Paint River.

See Sections 9.0 and 11.0 of this plan for management of sockeye returns to Bear Lake, Port Graham Bay and the English Bay Lakes system.

3. Egg Removal Schedule: ~~The broodstock removal schedule for the Kenai Lake broodstock spawning aggregates will be determined in consultation with ADF&G and described in the Trail Lakes Hatchery Annual Management Plan.~~

All adult sockeye returning to Tutka Creek are available for harvest in accordance with 5 AAC 21.373.

See Sections 9.0 and 11.0 of this plan for egg take removal schedules for Bear Lake and the English Bay Lakes system.

8.3 Release Plans

Sockeye fry destined for release in Lower Cook Inlet lakes will be reared at Trail Lakes Hatchery until June and then flown to Lower Cook Inlet lakes in fixed or rotor winged aircraft. For any year during the transition period, Leisure Lake, Hazel Lake and Kirschner Lake will receive fry from only one broodstock, but may receive fry from different broodstocks on alternate years. Sockeye smolt destined for release in Tutka Bay Lagoon will be reared at Trail Lakes Hatchery until March/April and then trucked and boated to Tutka Bay Lagoon net pens for final rearing. Sockeye smolt will be released in June. Specific release plans will be identified in the Trail Lakes hatchery Annual Management Plan each year.

8.4 Common Property Fisheries Management

Sockeye salmon returning to Lower Cook Inlet lakes stocking sites and Tutka Creek contribute to commercial set gillnet, purse seine, recreational, personal use, and subsistence fisheries. Commercial purse seiners harvest most of the returning fish. Purse seine harvests take place primarily in terminal locations, so therefore, are essentially stock specific. Specific management strategies designed to achieve an equitable distribution of the harvest between commercial seiners and CIAA~~,~~ will be described in the Trail Lakes Hatchery Annual Management Plan and will be implemented in accordance with 16.10.400 – 16.10.480 and 5 AAC ~~21.373~~40.840 and 5 AAC 40.990~~, will be implemented~~.

Since no naturally occurring sockeye salmon return to Tutka Creek exists, no escapement goal is warranted or in place for this system.

Contingent upon resumption of stocking at Paint River Lakes, adult sockeye returning to that system will be available for harvest in the Kamishak Bay District commercial seine fishery. Incidental harvests are expected to occur in both the Chenik and McNeil Subdistricts. Targeted harvests will occur in the Paint River Subdistrict. ADF&G will manage the Kamishak Bay District seine fishery to achieve spawning escapement goals established by ADF&G.

~~There is not a naturally occurring sockeye salmon return to Tutka Creek; therefore, no escapement goal exists for this system. After 2010, adult sockeye salmon returning to Tutka Lagoon and Creek will be subject to specific management strategies designed to achieve an equitable distribution of the harvest between commercial seiners and CIAA, in accordance with 5 AAC 21.373.~~

8.5 Special Harvest Management

1. **Definition:**

Chenik Lake SHA: All marine waters of the Chenik Subdistrict in the Kamishak Bay District north of 59° 12.50' N. Lat., south of 59° 14.50' N. Lat. and west of 154° W. Long.

~~**Leisure Lake SHA:** All marine waters of China Poot Bay Subdistrict in the Southern District east of a line connecting 59° 33.98' N. Lat., 151° 17.70' W. Long. and 59° 33.46' N. Lat., 151° 17.72' W. Long.~~

~~**Hazel Lake SHA:** All marine waters of Neptune Bay in the Southern District south of a line between 59° 33.12' N. Lat., 151° 22.30' W. Long. and 59° 32.83' N. Lat., 151° 24.95' W. Long.~~

China Poot and Hazel Lake SHA: All marine waters of the China Poot Bay Subdistrict in the Southern District shoreward of and enclosed by a line from 59ø 34.66' N. lat., 151ø 19.27' W. long., to 59ø 35.08' N. lat., 151ø 19.77' W. long., to 59ø 33.09' N. lat., 151ø 25.22' W. long., to 59ø 32.84' N. lat., 151ø 24.90' W. long.

Bruin Lake SHA: All marine waters of the Bruin Bay Subdistrict in the Kamishak Bay District north of a line connecting 59° 23.17' N. Lat., 153° 56.90' W. Long. and 59° 22.50' N. Lat., 154° 01' W. Long.

Kirschner Lake SHA: All marine waters within the Bruin Bay Subdistrict of the Kamishak District northwest of a line connecting 59° 25.17' N. Lat., 153° 50.50' W. Long. and 59° 23.17' N. Lat., 153° 56.90' W. Long.

In accordance with Alaska Board of Fisheries (board) intent language, as adopted at the November 2010 board meeting in Homer, ADF&G may alter the boundaries of the Kirschner Lake SHA prior to attainment of CIAA's revenue goal as necessary in order to facilitate the orderly common property harvest of natural stocks of salmon in Bruin Bay Subdistrict or other nearby subdistricts. In doing so, ADF&G will attempt to minimize disruption to CIAA's hatchery harvest opportunities targeting sockeye salmon returning to the Kirschner Lake SHA.

Paint River SHA: Within the Paint River Subdistrict in the Kamishak Bay District, all marine waters of Akjemguiga Cove west of a line drawn from a point on the south shore at approximately 59° 09.50' N. Lat., 154° 12.83' W. longitude, to a point on the north shore at approximately 59° 10' N. latitude, 154° 12.50' W. longitude, including the lagoon at the Paint River mouth and the inter-tidal fish ladder.

Tutka Bay SHA: ~~All marine waters of the Tutka Bay Subdistrict southeast of the H.E.A. power line crossing, including Tutka Bay Lagoon~~All marine waters of the Tutka Bay Subdistrict in the Southern

District southeast and shoreward of a line from 59ø 30.23' N. lat., 151ø 28.23' W. long. to 59ø 28.63' N. lat., 151ø 30.37' W. long., including Tutka Bay Lagoon.

2. **Management Plan:**

Chenik Lake SHA (contingent only upon resumption of stocking activities and subsequent adult returns resulting from this stocking): Each season the Chenik Lake SHA will close to commercial fishing, and open to CIAA harvest, and will remain so until such time as CIAA's revenue goal is attained~~, in accordance with 5 AAC 21.373~~. Specific management strategies designed to achieve an equitable distribution of the harvest between commercial seiners and CIAA will be described in the Trail Lakes Hatchery Annual Management Plan and will be implemented in accordance with *16.10.400 – 16.10.480* and *5 AAC 40.840 – 5 AAC 40.990.*

~~**Leisure Lake SHA:** Each season the Leisure Lake SHA will be closed to commercial fishing, and be opened to CIAA harvest, and will remain so until such time as CIAA's revenue goal is attained, in accordance with 5 AAC 21.373.~~

China Poot and Hazel Lake SHA: Each season the China Poot and Hazel Lake SHA will be closed to commercial fishing, and be opened to CIAA harvest, and will remain so until such time as CIAA's revenue goal is attained~~, in accordance with 5 AAC 21.373~~. Specific management strategies designed to achieve an equitable distribution of the harvest between commercial seiners and CIAA will be described in the Trail Lakes Hatchery Annual Management Plan and will be implemented in accordance with *16.10.400 – 16.10.480* and *5 AAC 40.840 – 5 AAC 40.990.*

Bruin Lake SHA (contingent only upon resumption of stocking activities and subsequent adult returns resulting from this stocking): Each season the Bruin Lake SHA will be closed to commercial fishing, and be opened to CIAA harvest, and will remain so until such time as CIAA's Bruin Lake revenue goal is attained~~, in accordance with 5 AAC 21.373~~. Specific management strategies designed to achieve an equitable distribution of the harvest between commercial seiners and CIAA will be described in the Trail Lakes Hatchery Annual Management Plan and will be implemented in accordance with *16.10.400 – 16.10.480* and *5 AAC 40.840 – 5 AAC 40.990.*

Kirschner Lake SHA: Each season the Kirschner Lake SHA will be closed to commercial fishing, and be opened to CIAA harvest, and will

remain so until such time as CIAA's revenue goal is attained~~, in accordance with 5 AAC 21.373~~. Specific management strategies designed to achieve an equitable distribution of the harvest between commercial seiners and CIAA will be described in the Trail Lakes Hatchery Annual Management Plan and will be implemented in accordance with *16.10.400 – 16.10.480* and *5 AAC 40.840 – 5 AAC 40.990.*

Paint River SHA (contingent only upon resumption of stocking activities and subsequent adult returns resulting from this stocking): Each season the inter-tidal fish ladder is operated, the Paint River SHA may be opened to harvest by authorized representatives of CIAA only during periods established by emergency order, and will remain so until such time as CIAA's revenue goal is achieved~~, in accordance with 5 AAC 21.373~~. Specific management strategies designed to achieve an equitable distribution of the harvest between commercial seiners and CIAA will be described in the Trail Lakes Hatchery Annual Management Plan and will be implemented in accordance with *16.10.400 – 16.10.480* and *5 AAC 40.840 – 5 AAC 40.990.*

Tutka Bay SHA: Each season the Tutka Bay SHA will be closed to commercial fishing, and be opened to CIAA harvest, and will remain so until such time as CIAA's revenue goal is attained~~, in accordance with 5 AAC 21.373~~. Specific management strategies designed to achieve an equitable distribution of the harvest between commercial seiners and CIAA will be described in the Trail Lakes Hatchery Annual Management Plan and will be implemented in accordance with *16.10.400 – 16.10.480* and *5 AAC 40.840 – 5 AAC 40.990.*

8.6 Special Research and Operational Requirements

Limnological sampling was required at all Lower Cook Inlet lakes to evaluate optimum stocking densities. Specific evaluation plans for broodstock collection and each release location will be included in each year's Annual Management Plan. All released fish will be thermally marked.

9.0 Resurrection Bay Sockeye

Bear Lake (445 acres), located near Seward, has been the site of an ongoing coho salmon enhancement project. ADF&G initiated the project in 1962; CIAA assumed operation of the project in 1989 and expanded it to include the stocking of sockeye salmon in 1990. The purpose of the expanded project was to maintain a commercial sockeye salmon fishery without negatively impacting the coho salmon sport fishery.

CIAA initiated a separate sockeye smolt release project at Grouse Lake, located near Bear Lake, in 1993. The purpose of the project was to create and maintain an adult sockeye salmon return to Grouse Lake for cost recovery harvest to generate revenue for CIAA enhancement programs. Because goals were never achieved, the Grouse Lake project was terminated, with the last fry release occurring in 1998.

In an effort to develop an adult sockeye return to Resurrection Bay deliberately sized to support and maintain the current Bear Lake salmon enhancement project, and additionally support operation of CIAA's non-Tutka Bay Hatchery salmon enhancement programs, CIAA began to increase sockeye salmon releases to Bear Lake through fall presmolt and spring smolt releases, while maintaining traditional spring fry releases. Additionally, CIAA submitted a proposal to the Alaska Board of Fisheries (BOF) at their fall 2004 meeting in Anchorage to manage the harvestable surplus of adult sockeye salmon returning to Bear Lake to achieve an equal allocation between the common property seine fleet and CIAA. The BOF adopted this proposal, and the new plan was implemented for the first time beginning with the 2005 season.

CIAA estimates the cumulative juvenile sockeye salmon releases at Bear Lake will ultimately produce up to 212,000 returning adults annually. A return of this magnitude will maintain the Bear Lake desired inriver return of 12,000 fish, while the remainder will be available for harvest in common property and hatchery cost recovery fisheries.

9.1 Development Schedule

CIAA is currently permitted to collect up to 7,100,000 eggs at Bear Lake. To achieve the goals established for the Bear Lake sockeye salmon enhancement project, CIAA must secure up to 6,000,000 eggs annually. All eggs will be incubated and resulting fish reared at Trail Lakes Hatchery and at the Eklutna Salmon Hatchery when water shortages exist following standard hatchery procedures. Of the 4,800,000 resulting fry, approximately half (2,400,000) will be released to Bear Lake in the spring. Fish remaining after the fry release will be reared to presmolt, transferred to saltwater net pens in Resurrection Bay in March or April, reared to smolt and released directly to Resurrection Bay in June.

Smolt stocking rates may be adjusted to reflect the primary intent of the project as information from the evaluation program becomes available.

CIAA proposes to refine this project over the next five years. CIAA will attempt to collect 6,000,000 eggs in 2006. The Resurrection Bay commercial common property and hatchery fisheries will continue to be managed for a desired inriver return of 12,000 sockeyes into Bear Lake.

The first adult sockeye from the smolt releases will return in 2009. Adult sockeye returns from full fry production are projected to occur in 2010.

9.2 Broodstock

To originally develop the Bear Lake sockeye return, CIAA initially collected broodstock from Upper Russian and Big River Lakes. Since 1993, CIAA has collected broodstock exclusively from Bear Lake; however, these gamete collection exercises have not always been successful. Nonetheless, CIAA has continued to improve its ability to collect gametes at Bear Lake. In order to achieve the sockeye fry, and smolt release goals, CIAA must secure 6,000,000 million eggs annually.

The history of the Bear Lake sockeye salmon run is quite unique. Efforts were made by ADF&G, until about the mid-1980's, to eradicate the naturally occurring sockeye salmon run in order to maximize coho salmon production. The ***Bear Lake Management Plan (5 AAC 21.375)*** adopted in 1985, directs ADF&G to establish a sockeye salmon escapement goal and to manage fisheries to meet this goal. While a goal of 1,000 sockeye salmon was listed in various ADF&G reports after 1985, management of this run since the early 1990's has been strongly influenced by the operation of Trail Lakes Hatchery (TLH) and the Bear Lake sockeye enhancement program. Prior to 2001, the TLH Annual Management Plan specified a minimum escapement goal of 5,000 sockeyes and a maximum of 8,000 for Bear Lake. These goals were established to ensure the availability of hatchery broodstock rather than to produce a sustained yield from a naturally spawning run. Once allowed to migrate past the weir and enter the lake, sockeyes are allowed to mature before being collected for broodstock. A limited number of these fish escape to spawn naturally within the system.

After ADF&G reviewed escapement goals throughout Lower Cook Inlet in 2001, a new sustainable escapement goal (SEG) of 700 to 8,300 sockeye salmon was established for Bear Lake. Because CIAA has expanded production through increased stocking of Bear Lake, Resurrection Bay and three Lower Cook Inlet lakes, achievement of the egg take goal is critical to the success of ~~the~~several enhancement projects. Since broodstock are collected from lake escapement, the hatchery broodstock requirements are added onto the SEG to produce a "desired inriver return" range. Because CIAA has encountered difficulty achieving its egg take goals when lake escapements are low, an escapement near the upper end of the desired inriver return range is favored. ~~Therefore, in an effort to~~

~~facilitate achievement of this goal and assure adequate broodstock, the Bear Lake desired inriver return is 12,000 sockeyes.~~

1. Sources: To support the Resurrection Bay sockeye salmon enhancement project, CIAA will collect up to 6 million green eggs and milt for fertilization, incubation, rearing and release. The primary gamete collection source will be Bear Lake. Gametes may also be collected from other donor stocks approved through the Annual Management Plan and the ADF&G fish transport permit process. Gametes secured from these secondary donor stocks will only be collected when it is projected less than 5 million green eggs can reasonably be obtained from Bear Lake and after ADF&G has approved gamete collection from the secondary donor stock.

To support the Lower Cook Inlet lakes sockeye salmon enhancement project, CIAA may collect up to 2.5 million green eggs and milt for fertilization, incubation, rearing and release. All gametes collected for the Lower Cook Inlet lakes enhancement project will be collected from Bear Lake. No gametes will be collected for the Lower Cook Inlet lakes project after 2018.

At any location, fish will be captured by beach seine or weir. Fish that are ripe or nearly ripe will be held in enclosures or net pens until their gametes can be successfully removed.

ADF&G pathology protocols will be followed for the removal of gametes.

2. Management: Adult sockeye returning to any secondary donor site will not be subject to specific management strategies to assure donor stock availability. Adult sockeye returning to Bear Lake will be managed according to the provisions outlined in sections 9.4 and 9.5.

Management for the Bear Lake desired inriver return provides sufficient numbers of fish to achieve both the SEG and hatchery broodstock requirements.

3. Egg Removal Schedule: The Bear Lake sockeye salmon minimum inriver return is the sum of the low end of the SEG (700) and the hatchery broodstock goal during a given year. The first 50% of this total that are female fish arriving at the Bear Creek weir, combined with the first 50% of this total that are males arriving at the weir, shall be allowed to pass into Bear Lake. Of the total escapement allowed into Bear Lake during a given year, all but 700 of these fish may be available for hatchery broodstock.

When secondary donor stocks are used, the *"Standard Guidelines for Calculating Adult Removal Schedules for Hatchery Egg Takes"* shall be applied.

9.3 Release Plans

All Bear Lake sockeye eggs will be incubated and resulting fish reared at Trail Lakes Hatchery following standard hatchery procedures. Two groups of fry will be reared for release to Bear Lake and Resurrection Bay. Emergent fry will be: 1) reared to an average size of 0.2 to 0.7 grams, trucked to Bear Lake and released into an unnamed tributary stream in late May or June or flown to Leisure Lake, Hazel Lake or Kirschner Lake and released in late May or June; 2) reared to an average size of 7.0 to 12.0 grams, trucked to net pens in Resurrection Bay in March or April and released into Resurrection Bay in June of the following year. The net pens will be located along the east shore of Resurrection Bay just north of the Marine Industrial Park.

The following are the release goals and the estimated adult production for the Bear Lake sockeye fry, ~~and~~ Resurrection Bay smolt, and Lower Cook Inlet lakes releases.

Life Stage	Egg Take Goal	Release Goal	Release Site	Release Size (gms)	Estimated Smolt Production	Estimated Adult Return
Fry	3,000,000	2,400,000	Bear Lk.	0.2 to 0.7	684,000	116,000
Fry	2,500,000	2,000,000	LCI Lakes	0.2 to 0.7	400,000	80,000
Smolt	~~13,000,000~~ 3,000,000	~~1,400,000~~ 1,560,000	Bear Lk.	8.0 to 12.0	~~1,400,000~~1,560,000	~~140,000~~156,0000

CIAA has found the rearing of sockeye to the presmolt and smolt stages to be quite variable. The smolt release objective described above —is an average value. CIAA expects the sockeye smolt releases to vary in any given year. CIAA may adjust the number of smolt released through the Annual Management Plan and the ADF&G fish transport permit process.

9.4 Common Property Fisheries Management

Bear Lake sockeyes typically return from mid to late May to early July. Most of the escapement occurs in mid-June. Sockeye returns to Bear Lake are harvested primarily in the Resurrection Bay commercial purse seine and cost recovery fisheries and secondarily in the Resurrection Bay recreational fishery.

The Resurrection Bay sockeye return is managed: 1) to achieve the Bear Lake desired inriver return; 2) to minimize conflict with the recreational fishery ~~in accordance with **5 AAC 21.375 (b) (3)**~~; and 3) to ~~achieve an equal harvest allocation between commercial seiners and CIAA in accordance with **5 AAC 21.375 (c)**~~harvest fish that are surplus to escapement and hatchery broodstock and cost recovery goals.

~~The Bear Lake desired inriver return is 12,000 fish.~~ Management for an escapement near the upper end of the Bear Lake desired inriver return provides for sufficient numbers of fish to achieve both the established SEG and hatchery broodstock requirements.

Inseason adjustments to fishing time and/or area parameters for commercial seiners and CIAA in Resurrection Bay will occur in an effort to achieve ~~regulatory~~ harvest objectives.

See Section 8.0 of this plan for a description of common property fisheries management for sockeye returns to the Lower Cook Inlet Lakes and Tutka Bay Lagoon.

9.5 Special Harvest Area Management

1. Definition: The Freshwater Special Harvest Area will consist of all freshwaters of Bear Creek, Salmon Creek, and Resurrection River downstream from and including the Bear Creek weir. The Resurrection Bay Saltwater Special Harvest Area will consist of marine waters of Resurrection Bay north of the latitude of Caines Head at approximately 59° 58.93' N. latitude. Permitted gear for the cost recovery harvest includes purse seine in marine waters, and beach seine and weir in fresh waters.

2. Freshwater Management Plan: In an effort to maintain an early run timing, spawning escapement shall be comprised of the first 50% of the low end of the desired inriver return range that are adult male and the first 50% of the low end of the desired inriver return range that are adult female sockeye salmon to enter the weir. These fish will be allowed to pass upstream to the lake. Once the aforementioned requirements are met, CIAA may begin to selectively harvest for sale any fish that return to Bear Creek weir and are excess to the desired inriver return. CIAA will attempt to maintain a 50/50 sex ratio of adult fish allowed to escape into Bear Lake.

3. Saltwater Management Plan: Management actions in the Resurrection Bay commercial salmon fishery will strive to achieve the regulatory management objective of an equal harvest allocation of Resurrection Bay sockeye salmon between commercial seiners and CIAA hatchery cost recovery, as measured in numbers of fish. The Resurrection Bay Saltwater Special Harvest Area (SHA) will be opened to harvest by authorized representatives of CIAA only during periods established by emergency order. Hatchery openings in marine waters will be based on cumulative commercial seine catches, escapement counts, and any freshwater harvest of fish by CIAA. Additionally, the likelihood of increased hatchery harvest by CIAA at the Bear Creek weir during the latter stages

of the run, as historically documented, will also be considered when determining hatchery fishing periods in the saltwater SHA.

9.6 Special Research and Operational Requirements

CIAA will evaluate Bear Lake limnology, and the smolt and adult migrations. For Resurrection Bay sockeye releases, CIAA will thermally mark the otolith of each group of fish released (fry_and smolt) and will sample the adult return to assess survival of each release.

CIAA will conduct a review of the project every 5 years. The purpose of this review will be to assess the success of the project in meeting the commercial and cost recovery harvest objectives.

10.0 Bear Lake Coho

Bear Lake (445 acres) is located near Seward (Figure 2). Bear Lake has been monitored and has been the site of an ADF&G coho salmon enhancement project since 1962. A Board of Fisheries (BOF) action allows sockeye salmon enhancement activities to be undertaken concurrently with coho salmon enhancement activities.

The primary intent of the enhancement program at Bear Lake is, through lake fertilization and stocking of both coho and sockeye salmon, is to maximize sockeye production without causing a net loss of coho smolt production. A secondary intent of the enhancement program at Bear Lake is to produce sufficient coho salmon eggs to service other enhancement projects.

Over the 28-year history of the Bear Lake coho program prior to the BOF action allowing for sockeye salmon enhancement activities, average annual coho production has been 65,000. An ADF&G coho salmon production model predicts that long-term annual production from Bear Lake should be about 86,000 smolts. Division of Sport Fisheries researchers believe the sustainable annual smolt production could be as large as 200,000. The highest eight year "rolling average" smolt production is about 103,000 for the period 1973 to 1982; and the highest four year "rolling average" is about 113,000 for the period 1982 to 1985. Year-by-year tallies demonstrate that smolt production from Bear Lake has been extremely variable. From 1973 to 1988, the largest number of smolts produced was about 144,000 in 1982 and the smallest number was about 64,000 in 1988.

Coho smolt production prior to the BOF action allowing for sockeye salmon enhancement activities averaged about 94,000 annually from 1973 to 1988 and about 92,000 from 1979 to 1988.

10.1 Development Schedule

There is no fixed egg take limit. The maximum number of eggs that can be incubated at Trail Lakes Hatchery is 4.0 million, and annual coho egg takes will be adjusted to reflect the needs of permitted projects as well as cooperative agreements with ADF&G.

Bear Lake fry stocking rates will be adjusted to maximize smolt production as data from the evaluation program becomes available. Any adjustment in fry stocking rate must be approved by ADF&G.

If other coho enhancement activities utilizing Bear Lake coho are deemed necessary, the enhancement activities will be developed in cooperation with the ~~Alaska Department of Fish and Game~~ADF&G and incorporated into this plan following accepted procedures.

10.2 Broodstock

1. Sources: Bear Creek coho adults will be collected at the permanent weir facility in Bear Creek. Fish will be held in the weir facility raceways, enclosures or net pens until ripe.

2. Management: Adult coho returning to Bear Creek will not be subject to any specific management strategies designed to assure donor stock availability. All returning adults will be available for hatchery brood stock.

10.3 Release Plans

Approximately 450,000 fish with an average weight between 1.0 and 2.0 grams will be released into Bear Lake each year. The release will be accomplished prior to mid-June

Fry surplus to Bear Lake or ADF&G stocking needs may be retained for rearing to smolt. Smolt will be released into Bear Creek, the Nick Dudiak Fishing Lagoon in Homer, Seldovia Bay or other sites approved by ADF&G. Eggs and fry made available to ADF&G through the cooperative agreement will be released by ADF&G.

10.4 Common Property Fishery Management

Returning adult coho will be harvested in mixed-stock recreational fisheries. There will be no specific management strategies applied to the fisheries designed to harvest surplus coho. Present policy precludes the commercial harvest of coho in Resurrection Bay.

10.5 Special Harvest Area Management

1. Definition: The Special Harvest Area will consist of all freshwaters of Bear Creek, Salmon Creek, and Resurrection River downstream from and including the Bear Creek weir. Actual harvest location will be at the permanent weir located near the outlet of Bear Lake. A short section of the Special Harvest Area, downstream of the Seward Highway and Nash Road, is open to recreational salmon fishing beginning August 1 each year. The previously described sockeye salmon hatchery cost recovery fishery (see Section 9.5) is also allowed in the Special Harvest Area.

2. Management Plan: CIAA will allow a minimum spawning escapement of 300 fish to pass upstream through the Bear Creek weir. CIAA will harvest for sale any fish that return to the Bear Creek weir and are in excess to the spawning escapement and hatchery broodstock requirements. No restrictions of the saltwater common property fishery will occur in order to provide for harvest by CIAA.

Should CIAA's cost recovery goal be attained prior to or during the Bear Lake coho return period, ADF&G biologists may open some or all of the Special Harvest Area to common property fisheries.

10.6 Special Research and Operational Monitoring

A portion of the coho fingerlings destined for release into Bear Lake and a portion of the coho smolt destined for release into Bear Creek will be marked. The number to be marked will be the minimum number needed to provide statistically reliable estimates of the percentage of Bear Creek or Bear Lake fish in the Resurrection Bay coho salmon fishery.

Limnological, smolt monitoring and adult monitoring studies are required.

11.0 English Bay Lakes Sockeye

The purpose of the English Bay Lakes system sockeye enhancement project is to provide adult sockeye salmon to the Lower Cook Inlet commercial fishery, for cost recovery harvest, and for personal use and subsistence harvests by the communities of Nanwalek and Port Graham. Fish are also available to the recreational fishery.

11.1 Development Schedule

The English Bay Lakes sockeye salmon enhancement project has been operating for over twenty years and has been modified several times. This project, as it is currently conducted, consists of an egg take from the English Bay Lakes system, the incubation and rearing of the resultant fry, and their release back to the English Bay Lakes system, Leisure Lake, Hazel Lake, Kirschner Lake, ~~and~~ Port Graham Bay and Tutka Bay Lagoon.

Egg incubation and fry rearing activities were originally completed at the Big Lake Salmon Hatchery and were transferred to the Port Graham Hatchery when it became operational in 1992. The Cook Inlet Aquaculture Association (CIAA) began assisting with the project in 2004, when eggs from the English Bay Lakes system were transferred to the Trail Lakes Hatchery for incubation and rearing.

Up to ~~1,350,000~~5,720,000 eggs ~~are~~ may be collected each year.

Specific releases to the English Bay Lakes system and Port Graham Bay are identified in the Annual Management Plan. Releases to the three Lower Cook Inlet Lakes and Tutka Bay Lagoon are identified in Section 8.0 of this plan.

11.2 Brood Stock

1. Sources: Brood-stock and gametes supporting the English Bay Lakes fry release and Port Graham Bay smolt release will be collected from the English Bay River system or the Port Graham Hatchery. Up to 1,450 returning adult sockeye salmon will be utilized for broodstock. Broodstock and gametes supporting the three Lower Cook Inlet Lakes fry releases and the Tutka Bay Lagoon smolt releases will collected from the English Bay River system. Up to 4,380 returning adult sockeye salmon will be utilized for broodstock. No broodstock or gametes will be collected for the Lower Cook Inlet lakes project after 2018.

A beach seine will be used in conjunction with a weir in Second Lake to capture pre-spawning adults, which will then be placed in holding pens until spawned. Third Lake will be used for broodstock collection only if there is insufficient broodstock in Second Lake and/or at Port Graham Hatchery.

Special efforts will be made to release unharmed all other species captured during broodstock seining. Any mortality problems associated with the collection and holding of adults for egg take and in the transport of eggs to the hatchery will be immediately reported to the ADF&G Homer office.

A seine boat will be used in Port Graham, along with beach seines, to collect broodstock in the Port Graham Special Harvest Area. Captured broodstock will be held in freshwater lensing bags until sexually mature.

2. Management: Sockeye returns to the English Bay River system and Port Graham Hatchery are harvested primarily in the Port Graham Subdistrict subsistence and commercial set gillnet fisheries.

English Bay River system sockeye traditionally return from early June to mid-July with most escapement occurring mid/late-June. The sockeye salmon sustainable escapement goal (SEG) for the English Bay River system is expressed as a range of 6,000 to 13,500 (mid-point 9,750). When the ~~hatchery's~~ English Bay Lakes and Port Graham Bay stocking project's broodstock requirements (up to 1,450 fish), which are removed from the escapement into the lakes, are added onto the SEG, the "desired inriver return" becomes a range of 7,450 – 14,950 sockeyes (mid-point 11,200). Management for the desired inriver return provides for adequate natural lake spawning and ensures sufficient hatchery broodstock is available at the English Bay River system.

3. Egg Removal Schedule: If the escapement to the English Bay Lakes system falls below the minimum desired inriver goal, a harvest of sockeyes from the English Bay Lakes system for hatchery broodstock will be considered on a case-by-case basis. If allowed, any brood from the lake escapement will be collected in accordance with the following egg removal schedule:

ENGLISH BAY LAKES SOCKEYE SALMON EGG REMOVAL SCHEDULE

Total Number of English Bay Lakes Sockeyes Returning:	Escapement allowed into English Bay Lakes:	Hatchery Broodstock Allocation:
Less than 6,000	100%	0
6,000 – 8,900	First 6,000, plus 50% of fish in excess of 6,000	50% of fish in excess of 6,000
More than 8,900	First 6,000 plus all fish in excess of broodstock collection ~~of 1,450~~	~~1,450~~Up to 5,830

All adult sockeye returning to Port Graham Hatchery are available for brood stock removal.

11.3 Release Plans

After incubating and rearing at Trail Lakes Hatchery, juvenile sockeye will be transported directly from that facility to the English Bay Lakes system, Leisure Lake, Hazel Lake and Kirschner Lake for release. Alternatively, some or all of juvenile sockeyes being reared at Trail Lakes Hatchery will be transported from that facility to the Tutka Bay Lagoon and Port Graham Hatchery and placed in net pens in Tutka Bay Lagoon and Port Graham Bay. All fish placed in the Tutka Bay Lagoon and Port Graham ~~Hatchery~~ Bay net pens will be released directly to Tutka Bay Lagoon and Port Graham Bay.

Specific releases to the English Bay Lakes system, Leisure Lake, Hazel Lake, Kirschner Lake, Tutka Bay Lagoon and Port Graham Bay will be identified in the Annual Management Plan.

11.4 Common Property Fisheries Management

Sockeye returns to the English Bay River system and Port Graham Hatchery are harvested primarily in the Port Graham Subdistrict subsistence and commercial set gillnet fisheries. Harvests take place primarily in terminal locations and, therefore, are essentially stock specific.

English Bay River system sockeye traditionally return from early June to mid-July with most escapement occurring mid/late-June.

The sockeye salmon sustainable escapement goal (SEG) for the English Bay River system is expressed as a mid-point and a range. Management for the desired inriver return provides for adequate natural lake spawning in the English Bay River system. If the adult sockeye return fails to achieve the lower bound of the SEG, no adult sockeye salmon returning to the English Bay River system are surplus to escapement needs and available for harvest of any kind. As a result, both the commercial and subsistence set gillnet fisheries in Port Graham Subdistrict (including BOTH the Port Graham and English Bay Sections) will likely remain closed until a larger return can be projected.

See Section 8.0 of this plan for a description of common property fisheries management for sockeye returns to the Lower Cook Inlet Lakes and Tutka Bay Lagoon.

11.5 Special Harvest Management

The Port Graham Hatchery Corporation (PGHC) and CIAA funds the English Bay Lakes system sockeye enhancement project by harvesting and selling a portion of the sockeye salmon returning to that system and by various grants.

1. **Definition:**

   English Bay River SHA: The English Bay River SHA consists of those waters of the English Bay River between 59° 20.53' N. latitude and 59° 20.88' N. latitude excluding the English Bay River Lagoon

   Port Graham SHA: The Port Graham SHA consists of all marine waters of the Port Graham Subdistrict east of 151° 53.08' W. longitude, and south and west of a line extending from the southernmost tip of Passage Island to the Coast Guard navigational buoy at approximately 59° 21.45' N. latitude, 151° 50.05' W. longitude, then southeast to a point on the mainland at approximately 59° 20.83' N. latitude, 151° 48.53' W. longitude.

2. **Management Plan:**

   English Bay River SHA: Each season the English Bay River SHA will be closed to commercial fishing and be opened to Port Graham Hatchery or CIAA harvest and will remain so until such time as the English Bay River system sockeye enhancement project revenue goal is attained. The English Bay River SHA will open to hatchery cost recovery harvest for agents of Port Graham Hatchery Corporation, or through agents of the Nanwalek Sockeye Project, only if surplus fish are available based on escapement counts. Surplus fish reaching the river will be removed for cost recovery on a regular basis during the entire course of the run to ensure that representative numbers from all segments of the run are allowed to escape.

   Port Graham SHA: Each season the Port Graham SHA will be closed to commercial fishing and be opened to Port Graham Hatchery or CIAA harvest and will remain so until such time as the English Bay River system sockeye enhancement project revenue goal is attained.

11.6 Special Research and Operational Requirements

Adult sockeye returns will be enumerated in the English Bay River system. ADF&G harvest tickets, and Port Graham Hatchery, or CIAA broodstock records will be used to enumerate the Port Graham Hatchery return. Specific evaluation plans and any special studies will be described in the Annual Management Plan. All released fish may be thermally marked.

12.0 Approval

The amended Trail Lakes Hatchery Basic Management Plan is hereby approved.

_____ _____

Deputy Commissioner
Alaska Department of Fish and Game

Date